

53. The polishing pad of claim 47, wherein a top surface of the transparent section is substantially coplanar with the polishing surface.

REMARKS

I. Informality Objections and Indefiniteness Rejections

The Examiner objected to claims 25, 38 and 39 due to various informalities. Claims 25, 38 and 39 have been amended to depend from the correct claims.

The Examiner rejected claim 18, at least partially on the grounds that the phrase "a second layer adjacent to the first layer" lacked proper antecedent basis. This rejection is not understood, as claim 18 itself recites that "the article includes a first layer".

Claim 19 states that "the transparent section extends through the first layer". Claim 20 states that "the aperture extends through the second layer". The Examiner rejected claims 19-20 as indefinite as being "vague, indefinite, and/or awkwardly and confusingly worded." This rejection is not understood. Applicant respectfully requests that the Examiner suggest claim language that would improve the clarity and precision of the language used, as recommended by MPEP 2173.02.

II. Prior Art Rejections

Claims 17, 18, 20, 21, 23, 26, 28, 32, 33, 35 and 36 stand rejected as allegedly anticipated by U.S. Patent No. 5,433,651 ("Lustig"). Claims 19, 22, 24, 25, 27, 29, 30, 31, 46 and 53 stand rejected as allegedly obvious over Lustig, without a secondary reference.

Applicant respectfully traverses the rejection. In brief, the Examiner appears to have confused the platen with the polishing pad.

A. Claims 17

Claim 17 calls for a polishing pad that has an article having a polishing surface and a surface opposite the polishing surface for attachment to a platen, a solid substantially transparent section formed in the polishing surface, and an aperture formed in the surface opposite the polishing surface and aligned with the transparent section.

The Examiner states "Lustig et al. discloses a polishing pad having a first top layer and a second bottom layer comprising an article having a polishing surface and a surface opposite the polishing surface, a substantially transparent section 72 formed in the polishing surface, and an aperture formed in the surface opposite the polishing surface and aligned with the transparent section".

Unfortunately, Lustig's disclosure does not support the Examiner's position. What Lustig teaches is a window (72) formed in the platen (64), and a viewing aperture (73) formed in the polishing pad (66) to overlie the window (72). Lustig explicitly states that "viewing window 72 is embedded within the table 62, and more particularly, such that a top surface of the window is substantially flush with a top surface of the platen 64." Thus, Lustig's solid transparent piece is located in the platen, and is not part of the polishing pad at all.

Since Lustig fails to show a polishing pad having a solid substantially transparent section formed in the polishing surface, claims 17, and the claims depending therefrom, should be allowable.

B. Claim 23

Claim 23 calls for a polishing pad with a first layer having a polishing surface and a solid substantially transparent section, and a second layer adjacent to the first layer having an aperture substantially aligned with the transparent section.

The Examiner argues that Lustig teaches a polishing pad with a top layer and a bottom layer. Again, Lustig's disclosure simply does not support the Examiner's position. Lustig clearly teaches a single-layer polishing pad (66) placed on top of a platen (64) (see Figure 8).

In addition, Lustig's solid transparent piece is located in the platen, and is not part of the polishing pad.

Since Lustig fails to show a polishing pad with a first layer having a polishing surface and a solid substantially transparent section, and a second layer adjacent to the first layer having an aperture substantially aligned with the transparent section, the rejection of claim 23, and the claims depending therefrom, must be withdrawn.

C. Claims 27 and 37

Claim 27 calls for a polishing pad with an article having a polishing surface and a solid substantially transparent section, the transparent section having a first portion with a first dimension and a second portion with a second, different dimension.

Similarly, claim 37 calls for a polishing pad with an article having a polishing surface, an aperture formed in the article, and a substantially transparent plug secured in the aperture, wherein the plug includes a first section with a first lateral dimension and a second section with a second, different lateral dimension.

First, Lustig fails to teach a polishing pad with a solid substantially transparent section.

Second, the Examiner relies on *In re Rose* for the proposition that a change in size is generally recognized as being within the level of ordinary skill in the art. However, the Examiner's citation of case law does not provide a motivation to make the invention. Claim 27 calls for a transparent section in the polishing pad having two portions of two different dimensions. Claim 37 calls for a polishing pad with a plug that includes two sections with different lateral dimensions. Changing the size of the transparent plug would not result in a transparent plug having two portions or sections with different dimensions, as recited in claims 27 and 37.

Since Lustig does not teach or suggest a polishing pad with a transparent section having a first portion with a first dimension and a second portion with a second, different dimension, claims 27 and 37, and the claims depending therefrom, should be allowable.

D. Claim 31

Claim 31 calls for a chemical mechanical polishing apparatus with a carrier head to hold a substrate, a polishing pad having a polishing surface and a surface opposite the polishing surface, and a motor to generate relative motion between the carrier head and the polishing pad. The polishing pad includes a first layer having a polishing surface with a solid transparent section and a second layer adjacent to the first layer having an aperture substantially aligned with the transparent section.

As discussed above, Lustig teaches a window (72) formed in the platen (64), and a viewing aperture (73) formed in the polishing pad (66) to overlie the window (72). Lustig's

solid transparent piece is located in the platen, and is not part of the polishing pad at all. In addition, Lustig clearly teaches a single-layer polishing pad (66) placed on top of a platen (64) (see Figure 8).

Since Lustig fails to show or suggest a polishing pad having a solid transparent section formed in the polishing surface, claim 31, and the claims depending therefrom, should be allowable.

E. Claim 47

Claim 47 calls for a polishing pad with a polishing layer having a polishing surface and a bottom surface, an aperture formed in the polishing layer, and a substantially transparent plug, wherein the plug includes a first section in the aperture and a second section secured to the bottom surface of the polishing layer.

The Examiner did not provide any reason for the rejection of claim 47.

In any event, since Lustig fails to show or suggest a polishing pad having a substantially transparent plug that includes a first section in an aperture and a second section secured to the bottom surface of the polishing layer, claim 47, and the claims depending therefrom, should be allowable.

Attached is a marked-up version of the changes being made by the current amendment.

Applicant asks that all claims be allowed. Enclosed is a \$110.00 check for the Petition for Extension of Time fee. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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Version with markings to show changes made

In the claims:

Claims 17, 23, 25, 27, 31, 38 and 39 have been amended as follows:

17. (Amended) A polishing pad for a chemical mechanical polishing apparatus, comprising:

an article having a polishing surface and a surface opposite the polishing surface for attachment to a platen;

a solid substantially transparent section formed in the polishing surface; and

an aperture formed in the surface opposite the polishing surface and aligned with the transparent section.

23. (Amended) A polishing pad for a chemical mechanical polishing apparatus, comprising:

a first layer having a polishing surface and a solid substantially transparent section; and

a second layer adjacent to the first layer having an aperture substantially aligned with the transparent section.

25. (Amended) The polishing pad of claim [25] 23, wherein the transparent section is formed of a polyurethane material.

27. (Amended) A polishing pad for a chemical mechanical polishing apparatus, comprising:

an article having a polishing surface and a solid substantially transparent section, the transparent section having a first portion with a first dimension and a second portion with a second, different dimension.

31. (Amended) A chemical mechanical polishing apparatus, comprising:

a carrier head to hold a substrate;

a polishing pad having a polishing surface and a surface opposite the polishing surface, the polishing pad including a first layer having a polishing surface with a solid substantially transparent section and a second layer adjacent to the first layer having an aperture substantially aligned with the transparent section; and

a motor to generate relative motion between the carrier head and the polishing pad.

38. (Amended) The polishing pad of claim [27] 37, wherein the first section of the plug is closer to the polishing surface.

39. (Amended) The polishing pad of claim [33] 38, wherein the first lateral dimension is smaller than the second lateral dimension.